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Impact Produced by Oral Conditions on the Quality of Life of Brazilian Workers of a Mixed-Economy Company

Maria Helena Monteiro de Barros Miotto[1], Letícia Mainardi Motta Gomes[2], Deise Berger Velten[3], Ludmilla Awad Barcellos[4]

[1]Associate Professor, Graduate Program in Collective Health, Federal University of Espírito Santo, Vitória, ES, Brazil.
[2]Specialist in Labor Dentistry, Vitória, ES, Brazil.
[3]Master in Collective Health, Graduate Program in Collective Health, Federal University of Espírito Santo, Vitória, ES, Brazil.
[4]Professor, Department of Dentistry, University of Vila Velha, Vila Velha, ES, Brazil.

Author to whom correspondence should be addressed: Maria Helena Monteiro de Barros Miotto, Programa de Pós-Graduação em Saúde Coletiva, Av Marechal Campos, 1468, Maruípe, Vitória, ES, Brazil. 29043-900. Phone: +55 27 3335-7287. E-mail: mhmiotto@terra.com.br.

Abstract

Objective: To evaluate the impact on quality of life caused by oral health problems among administrative sector employees of a mixed-economy company, residents in Vitória, Brazil. **Material and Methods:** This cross-sectional study used a random sample of 167 individuals. Quality of life measured by the subjective indicator OHIP-14, was the outcome considered; independent variables were sociodemographic, oral health dental services use and perceived prosthesis need. OHIP evaluates impairments in the three dimensions of social, psychological and physical functional conditions. To evaluate differences between groups, Chi-Square and Fisher's Exact Tests were used (p<0.05). To assess the strength of association, Odds-Ratio was calculated. **Results:** The health professional most sought by individuals in the last 12 months was the dentist (88.5%), agreed by the company (62.6%) due to prevention reasons (62.6%). The prevalence of impact caused by oral health problems was 7.8% and most recorded dimensions were physical pain (6%) and psychological discomfort (5.4%). Impact perception was greater among individuals who declared need for partial removable denture at functional limitation and psychological incapacity dimensions. Subjects that used urgency oral health services presented more impact at psychological discomfort dimension. **Conclusion:** The impact frequency was low. Objective and subjective measures can provide accurate analysis to support health policies directed to the real population needs.

Keywords: Quality of Life; Oral Health; Disease Impact Profile.

Introduction

Quality of life is an eminently human notion, which has been defined as the degree of satisfaction found in everyday life that a given society considers its standard of comfort and well-being. In a comprehensive way, it reflects knowledge, experiences and values of individuals, being a social construction [1].

The health promotion model shows the role of social determinants on health conditions. Health is the product of a broad spectrum of factors related to quality of life, including adequate standard of diet and nutrition; housing and sanitation; work conditions; education opportunities; physical environment; social support; lifestyle and adequate spectrum of health care [2].

Dentistry is directly linked to the field of health promotion since oral disorders can generate discomforts that affect the quality of life of workers; therefore, the work-related oral health field has the purpose of promoting, preserving and recovering the health of the oral cavity of populations inserted in diverse work processes [3]. Deficiencies related to the stomatognathic system can generate painful stimuli as well as psychological and emotional alterations that directly and negatively affect the performance of daily activities [4].

Quality of life indicators measure the extent to which oral disorders disrupt social function normality and lead to significant changes in behavior, such as inability to work or attend school, or to undertake household duties.

The Oral Health Impact Profile (OHIP) assesses functional difficulties in social, psychological and physical aspects in seven quality of life dimensions. It was developed with the aim of providing a comprehensive measure of self-perception of oral disorders that may or may not affect quality of life. These measures were constructed to complement traditional indicators of oral epidemiology and thus provide information on the impact on the daily life of populations and the effectiveness of health services in reducing this impact.

OHIP was initially developed in the English language and in a different sociocultural context. To adapt the instrument to the Brazilian reality, transcultural translation was performed. The validation of the instrument demonstrated psychometric properties similar to original ones [7].

Few studies have used subjective indicators of oral health in samples of workers with high schooling, and considering that subjective oral health indexes have been increasingly used in dentistry, this research aims to evaluate the level of impact that oral problems cause in the quality of life of employees working at a mixed-economy company using the OHIP-14 subjective indicator.

Material and Methods

Study Design and Sampling

The study collected data in a mixed-economy company located in Vitória, Espírito Santo state. The company's work consists of the collection, treatment and distribution of water, and collection and treatment of sewage.

This cross-sectional study analyzed a random sample selected from a universe of 877 workers aged over 18 years. Expected impact prevalence of 30%, 95% confidence level and 5% error were used as parameters for sample calculation. This expected prevalence was based on that found in studies in the working population of the state of Espírito Santo, Brazil. Minimum sample of 164 individuals was calculated and to compensate for possible losses, there was an increment of 20%, resulting in a sample of 204 individuals. Selection was carried out using a table of random numbers, and employees of the company located in Vitória aged 18-60 years participated in the draw, which is the age group that includes the largest contingent of workers in the company. Employees dismissed for reasons of holidays or on leave of any kind were excluded from the selection.

Data Collection

The independent variables considered for analysis were sociodemographic: sex, age, socioeconomic status (SES); use of dental services in the last 12 months (yes / no) and reason for using the dental service - routine / urgency - and reported need for partial and total removable prosthesis in one of the arches (upper and / or lower).

OHIP 14 scores in each dimension (functional limitation, physical pain, psychological discomfort, physical incapacity, psychological incapacity, social incapacity and disability) and the overall score was considered as dependent variable.

Three structured scripts were used: a script recorded sociodemographic information - age, sex and socioeconomic status; oral condition (dentate / edentulous) was described in a dichotomous way, in which those with at least one tooth in the mouth were considered dentate.

The socioeconomic condition of interviewees was categorized according to the possession of consumer goods and the head of family's schooling into A, B, C, D and E by means of the Brazil Economic Classification Criterion [8], adopted in several Brazilian studies. Another script was used to collect information regarding the use of oral health services in the last 12 months, the professionals sought and the reason and the type of service used.

To evaluate the impact of oral problems on quality of life, OHIP 14 was used. This guide evaluated the respondents' perception about the impacts produced by the oral condition on quality of life. OHIP evaluates impairments in the three dimensions of social, psychological and physical functional conditions. A five-point Likert frequency scale was used for coding the responses. The results were dichotomously assessed: "often" and "always" responses were considered as impact and "sometimes", "rarely" and "never" responses were considered to have no impact.

In case the participant was not found in a maximum of two attempts, he / she would be replaced by the next employee on the list, according to the registration number. The interview was held at a single time in the employee's workplace in a reserved place at the request of the company.

Statistical Analysis

To evaluate the difference between groups, Chi-square and / or Fisher's exact tests were used for each independent variable and the seven OHIP dimensions. To assess the magnitude of the association between outcome and exposure, the Odds Ratio (OR) and its 95% confidence interval (CI) were calculated.

Stratification by dimension allowed knowing the frequency of impact by dimension, but made it difficult to know the association between a predictor and the variable effect for all combined dimensions. To solve these problems, the Mantel-Haenzsel method was used, calculating the magnitude of the effect through OR. The significance level adopted in tests was $\alpha = 5\%$. The Statistical Package for the Social Sciences software ((SPSS Inc., Chicago, IL, USA) version 15 was used for analyses.

Ethical Aspects

The research project was approved by the Research Ethics Committee of the Federal University of Espírito Santo under Protocol No. 019/09. All participants signed the informed consent form.

Results

The final sample was composed of 167 (81.8%) individuals. The socio-demographic profile of the sample is predominantly male (61.1%), age 40-60 years (56.2%), and higher education schooling (56.3%). Almost 30% of participants declared income above 10 minimum wages and there was also absence of individuals belonging to socioeconomic classes D and E (Table 1).

Table 1. Sociodemographic data of employees.

Variables	N	%
Sex		
Male	102	61.1
Female	65	38.9
Age Group		
20 - 29 years	35	21.0
30 - 39 years	35	21.0
40 - 49 years	52	31.1
50 − 59 years	42	25.1
60 years	3	1.8
Socioeconomic Status		
A	27	16.2
B	109	65.3
C	31	18.5
Marital Status		
Single	47	28.1
Married	105	62.9
Stable union	3	1.8
Divorced	12	7.2
Schooling		
Up to 3rd grade of elementary school	1	0.6
Up to complete elementary school	2	1.2

Up to incomplete high school	10	6.0
Up to incomplete higher education	60	35.9
Complete higher education	94	56.3
Family Income in US dollars		
Between 320 and 700	1	0.6
Between 701 to 1,500	31	18.6
Between 1,501 and 3,000	85	50.9
More than 3,000	50	29.9

The health professional most sought by individuals participating in the research in the last 12 months was the dentist (88.5%), agreed by the company (62.6%) due to prevention reasons (62.6%). When observing the dentition situation of participants, it was observed that: 100% of people were dentate and of these 51.5% had dental loss of at least one element; 76% reported they did not need partial removable prosthesis (PRP) and 90.4% of total removable prosthesis (TRP) (Table 2).

Table 2. Data on dentition condition and use of dental services.

Variables	N	%
Dentition Condition		
Dentate	167	100.0
Dental loss	86	51.5
Declared Need for Partial Removable Prosthesis		
Does not need	127	76.0
Needs and uses	21	12.6
Needs, has and does not use	9	5.4
Needs and does not have	5	3.0
Does not know	5	3.0
Declared need for Total Removable Prosthesis		
Does not need	151	90.4
Needs and uses	6	3.6
Needs, has and does not use	8	4.8
Needs and does not have	2	1.2
Professional Sought		
Dentist	139	88.5
Physician	120	76.4
Nurse	16	10.2
Did not search for any professional	9	5.4
Reason for Using Dental Service		
Urgency	17	12.2
Routine treatment	68	48.9
Prevention	87	62.6
Type of Service Used		
Public service dentist	1	0.7
Service agreed by the company	10	7.2
Private health insurance	18	12.9
Health insurance dentist Surgeon	87	62.6
Private Dentist Surgeon	23	16.5

*The results exceed 100% because more than one alternative could be indicated.

The frequency of impact observed may be considered low (7.8%); and most recorded dimensions were physical pain and psychological discomfort (Table 3).

Table 3. Impact frequency by dimension.

Dimensions	Impact		No impact	
	N	%	N	%
Functional Limitation	2	1.2	165	98.8
Physical Pain	10	6.0	157	94.0
Psychological Discomfort	9	5.4	158	94.6
Physical Incapacity	2	1.2	165	98.8
Psychological Incapacity	5	3.0	162	97.0
Social Incapacity	2	1.2	165	98.8
Disability	3	1.8	164	98.2
Overall Score	13	7.8	154	92.2

When analyzing variables gender, socioeconomic status, age group and need for total removable prosthesis, no statistically significant differences were found between groups in the prevalence of impact in any of the OHIP dimensions, not even when considering the combined analysis (Table 4). In the analysis of variable need for PRP, statistically significant results in the functional limitation and psychological incapacity dimensions were observed for individuals who declared needing PRP.

Table 4. Impact frequency, according to declared need for partial removable prosthesis.

Dimensions	No Need		Need		p-value
	N	%	N	%	
Functional Limitation					
Impact	0	0.0	2	7.7	0.028
No Impact	127	100.0	24	92.3	
Physical Pain					
Impact	5	3.9	3	11.5	0.136
No Impact	122	96.1	23	88.5	
Psychological Discomfort					
Impact	5	3.9	3	11.5	0.136
No Impact	122	96.1	23	88.5	
Physical Incapacity					
Impact	1	0.8	1	3.8	0.312
No Impact	126	99.2	25	96.2	
Psychological Incapacity					
Impact	2	1.6	3	11.5	0.035
No Impact	125	98.4	23	88.5	
Social Incapacity					
Impact	1	0.8	1	3.8	0.312
No Impact	126	99.2	25	96.2	
Disability					
Impact	2	1.6	1	3.8	0.430
No Impact	125	98.4	25	96.2	
Mantel-Haenszel Combined					0.093

In the functional limitation dimension, workers who declared need for partial prosthesis were 6.292 (95% CI = 4.359, 9.081) more likely to have impact. In the psychological incapacity dimension, workers who declared need for partial prosthesis were 3.861 (95% CI = 1.721, 8.664) more likely to have impact.

Individuals who used dental services for urgency reasons had greater impact on the psychological discomfort dimension with 5.014 times more chance compared to the others (95% CI = 1.080, 23.271) (Table 5).

Table 5. Impact according to reason for the use of dental service.

	Urgency		Routine/Prevention		
Dimensions	N	%	N	%	**p-value**
Functional Limitation					
Impact	1	5.9	0	0.0	0.122
No Impact	16	94.1	122	100.0	
Physical Pain					
Impact	2	11.8	5	4.1	0.205
No Impact	15	88.2	117	95.9	
Psychological Discomfort					
Impact	3	17.6	5	4.1	0.025
No Impact	14	82.4	117	95.9	
Physical Incapacity					
Impact	0	0.0	1	0.8	0.878
No Impact	17	100.0	121	99.2	
Psychological Incapacity					
Impact	1	5.9	3	2.5	0.410
No Impact	16	94.1	119	97.5	
Social Incapacity					
Impact	0	0.0	1	0.8	0.878
No Impact	17	100.0	121	99.2	
Disability					
Impact	0	0.0	2	1.6	0.770
No Impact	17	100.0	120	98.4	
Mantel-Haenszel Combined					0.106

Discussion

From the advent of the expanded concept of health defined in the current health promotion model, quality of life indicators related to oral health have been used. Traditional epidemiological indicators appear to be limited because they lack the ability to capture perceptions related to difficulties faced in performing daily tasks and activities. A toothache is capable of causing alteration in the quality of life enough to result in a professional search and loss of working hours [9].

Oral problems can impact daily activities. The high prevalence of orofacial pain can impair the quality of life of workers. The prevalence of impacts related to oral problems may be high and, thus, affect quality of life [10,11].

This study found low prevalence of impacts (7.8%), which is a surprisingly result different from other Brazilian studies, showing frequency above 30% [5,12-15], possibly explained by the high level of education and income of workers. The result found here is even smaller when compared to a study conducted in the American and Australian populations [16]. However, a study carried out with workers from a Brazilian Public University found a frequency of impact lower than that verified in this study, which can also be explained by the high schooling of participants [17].

A systematic review confirmed the influence of social, economic, demographic, psychosocial, and behavioral factors on self-perception in oral health and quality of life [18]. Regarding variable sex, no statistically significant difference was found, a result similar to findings of other studies [5,12,14]. This result is different from a study that indicates higher perception for females [15].

Regarding the age group, no statistically significant difference was found between age groups, a result similar to that previously described [14]. However, several studies have demonstrated higher impact in individuals belonging to more advanced age groups [5,12,13,15,17,19-23]. The comparison of this variable presents fragility due to variability in stratification and in cutoff points.

Regarding socioeconomic status, this study did not find statistically significant differences in the prevalence of impacts among economic strata, which is possibly explained by the predominance of workers in classes A and B. These results were similar only to studies conducted in Juiz de Fora, MG [15] and Vitória, ES [14] because most participants belong to social class C [14]. Most studies have demonstrated high influence of social variables in determining the impact produced by oral conditions [5,12,13,18]. Previous studies investigating oral health perception have already shown positive association in groups with socioeconomic disadvantage, and higher impact in relation to oral health problems was perceived by individuals of socioeconomic classes D and E [10,24].

Results related to the reason for the use of dental services showed that individuals who seek the service due to urgency presented greater impact, confirming the trend shown in the available scientific literature [5,12,14,17,19,24,25].

Some studies developed by Brazilian researchers found rates of use of dental services around 60% [5,26,27]. In this work, the demand for the dental surgeon reached a frequency of more than 88%. The sample of this research presents specific characteristics because it represents a category of workers with high education and high income, when compared to samples from other studies in the same region [5,12], which possibly enabled access to dental services. Studies have shown that low income and schooling act as barriers for the use of dental services [18,27,28].

The results obtained in the present study showed that individuals with declared need for PRP presented greater impact in two of the seven OHIP dimensions: functional limitation (p=0.028) and psychological incapacity. When this variable was analyzed in other studies in the Brazilian population, the results have shown a significant impact in most dimensions. This fact suggests a better evaluation of this variable in order to organize the services offered to meet this repressed demand [5,12,14,25].

Regarding the need for total removable prosthesis (TRP), this study found no association. These results differ from those reported in other Brazilian studies [5,12,14,25], which demonstrated a high predictive value in the production of impact on quality of life in individuals who perceived the need for total removable prosthesis. A possible explanation for this fact involves the differentiated condition of this sample composed by workers of high schooling and favorable socioeconomic conditions, allowing access to private and free choice dental services agreed by the company.

Edentulism reduces the ability to chew, which can interfere with the absorption of nutrients, causing damage to health throughout life. The negative impacts produced by this condition go much further, extending to self-esteem, difficulty in social acceptance, and feeling of humiliation [29]. Considering that the prevalence of missing teeth in Brazilian workers is high, with a tendency to increase as age advances [30], public policies should be directed towards minimizing the possible impacts produced by this condition.

According to the Brazilian Guidelines for National Oral Health Policy, municipalities should provide full dentures to the population by organizing this service in Primary Care [31]. This premise, if fulfilled, would allow the functional and social rehabilitation of these individuals. Efforts are needed for the implementation of this service in order to resolve cases through professional training and quality of service [32]. Considering health as a subjectively perceived condition, the use of quality of life indicators can be very useful in directing oral health policies to meet the populations that perceive and suffer impact in daily life. Thus, it becomes possible to identify the conditions responsible for the reduction in quality of life, allowing better allocation of resources, which may contribute to gains in oral health conditions [33].

Conclusion

The impact frequency related to oral conditions in the sample studied was low. The association between normative and subjective measures allows a more logical and precise analysis, being able to redirect policies of management of health systems aimed at the real population needs.

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